	Application No.	Applicant(s)
Notice of Allowability	10/518,827	BOURGE ET AL.
	Examiner	Art Unit
	Shawn S. An	2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-6*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All   b) ☐ Some*   c) ☐ None   of the:

       1. ☒ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

       Paper No./Mail Date _____.

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☒ Information Disclosure Statements (PTO/SB/08),
    Paper No./Mail Date *12/21/04*

4. ☐ Examiner's Comment Regarding Requirement for Deposit
    of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413),
    Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

EXAMINER'S AMENDMENT

I.   An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

IN THE CLAIMS:

A)   Please amend claims 1-6 as follows:

1.   (currently amended) A video decoding method for the decompression of an input coded bitstream corresponding to an original video sequence that had been divided into successive groups of frames (GOFs) and coded by means of a three-dimensional subband video coding method comprising, in each GOF of ~~said~~ the sequence, the following steps:

[-]   a temporal filtering step, performed on each successive couple of frames;

[-]   a spatial analysis step, performed on ~~said~~ the filtered sequence;

[-]   an entropy coding step, performed on ~~said~~ the analyzed, filtered sequence;

[-]   an arithmetic coding step, applied to the coded sequence thus obtained;

wherein the decoding method, applied to the coded bitstream thus delivered for the current GOF~~, being further characterized in that it~~ is iterative and ~~comprises~~ includes as many iterations as the number of couples of frames in each GOF, each iteration itself including, for the reconstruction of each successive couple of frames of each GOF, the sub-steps of:

[-]   decoding ~~said~~ the coded bitstream;

[-]   from the decoded bitstream thus obtained, storing only the data related to the current couple of frames and the appropriate subbands containing some information on at least one frame of ~~said~~ the current couple of frames;

[-]   from ~~said~~ the related data and ~~said~~ the appropriate subbands, synthesizing the two frames of ~~said~~ the current couple of frames.

2.   (currently amended) A video decoding method for the decompression of an input coded bitstream corresponding to an original video sequence that had been divided into successive groups of frames (GOFs) and coded by means of a three-dimensional subband video coding method comprising the following steps:

[-]   a motion estimation step, performed on ~~said~~ the original sequence;

[-]   a motion compensated temporal filtering step, performed in each GOF of ~~said~~ the sequence, on each successive couple of frames;

[-]   a spatial analysis step, performed on ~~said~~ the filtered sequence;

[-]   an entropy coding step, performed on ~~said~~ the analyzed, filtered sequence and on motion vectors obtained by means of ~~said~~ the motion estimation step;

[-]   an arithmetic coding step, applied to the coded sequence thus obtained and delivering ~~said~~ the coded bitstream~~;~~,

~~Said~~ wherein the decoding method ~~being further characterized in that it~~ is iterative and comprises as many iterations as the number of couples of frames in each GOF, each iteration itself including, for the reconstruction of each successive couple of frames of each GOF, the sub-steps of:

[-]   decoding ~~said~~ the coded bitstream;

[-]   from the decoded bitstream thus obtained, storing only the data related to the current couple of frames and the appropriate subbands containing some information on at least one frame of ~~said~~ the current couple of frames;

[-]   from ~~said~~ the related data and ~~said~~ the appropriate subbands, synthesizing the two frames of ~~said~~ the current couple of frames.

3.   (currently amended)A video decoding device for the decompression of an input coded bitstream corresponding to an original video sequence that had been divided into successive groups of frames (GOFs) and coded by means of a three-dimensional

subband video coding method ~~comprising~~ including, in each GOF of said sequence, ~~the~~
~~following steps:~~

[-]   a temporal filtering step, performed on each successive couple of frames~~;~~,

[-]   a spatial analysis step, performed on said filtered sequence~~;~~,

[-]   an entropy coding step, performed on said analyzed, filtered sequence~~;~~,

[-]   an arithmetic coding step, applied to the coded sequence thus obtained and
delivering said coded bitstream~~;~~

         ~~said decoding device being further characterized in that it comprises~~, the device
comprising:

~~(1)~~   means for decoding ~~said~~ the coded bitstream;

~~(2)~~   means for storing, from the decoded bitstream thus obtained, only the data
related to the current couple of frames and the appropriate subbands containing some
information on at least one frame of ~~said~~ the current couple of frames;

~~(3)~~   means for synthesizing the two frames of ~~said~~ the current couple of frames from
~~said~~ the related data and ~~said~~ the appropriate subbands;

~~(4)~~   means for repeating as many times as the number of couples of frames in each
GOF the successive steps performed by ~~said~~ the decoding, storing and synthesizing
means.

4.   (currently amended)A video decoding device for the decompression of an input
coded bitstream corresponding to an original video sequence that had been divided into
successive groups of frames (GOFs) and coded by means of a 3D subband video
coding method ~~comprising the following steps:~~ including

[-]   a motion estimation step, performed on ~~said~~ the original sequence~~;~~,

[-]   a motion compensated temporal filtering step, performed, in each GOF of ~~said~~
the sequence, on each successive couple of frames~~;~~,

[-]   a spatial analysis step, performed on ~~said~~ the filtered sequence~~;~~,

[-]   an entropy coding step, performed on ~~said~~ the analyzed, filtered sequence and
on motion vectors obtained by means of ~~said~~ the motion estimation step~~;~~,

[-]   an arithmetic coding step, applied to the coded sequence thus obtained and delivering ~~said~~ the coded bitstream~~;~~,

~~said decoding device being further characterized in that it comprises~~ the device comprising:

~~(1)~~   means for decoding ~~said~~ the coded bitstream that corresponds to the current GOF;

~~(2)~~   means for storing, from the decoded bitstream thus obtained, only the data related to the current couple of frames and the appropriate subbands containing some information on at least one frame of ~~said~~ the current couple of frames;

~~(3)~~   means for synthesizing the two frames of ~~said~~ the current couple of frames from ~~said~~ the related data and ~~said~~ the appropriate subbands;

~~(4)~~   means for repeating as many times as the number of couples of frames in each GOF the successive steps performed by ~~said~~ the decoding, storing and synthesizing means.

5.   (currently amended)A ~~memory~~ computer readable medium ~~including a computer readable~~ with ~~code~~ computer program stored thereon for the decompression of an input coded bitstream corresponding to an original video sequence that had been divided into successive groups of frames (GOFs) and coded by means of a three-dimensional subband video coding method ~~comprising the following steps:~~ including

[-]   a temporal filtering step –with or without motion compensation- performed, in each GOF of ~~said~~ the sequence, on each successive couple of frame~~;~~,

[-]   a spatial analysis step, performed on ~~said~~ the filtered sequence~~;~~,

[-]   an entropy coding step, performed on ~~said~~ the analyzed, filtered sequence and on motion vectors in case of motion compensation~~;~~,

[-]   an arithmetic coding step, applied to the coded sequence thus obtained and delivering ~~said~~ the coded bitstream~~;~~,

~~said~~ the computer program ~~code~~ comprising:

[-]   a code for decoding ~~said~~ the coded bitstream ;

[-]   a code for storing, from the decoded bitstream thus obtained, only the data related to the current couple of frames and the appropriate subbands containing some information on at least one frame of ~~said~~ the current couple of frames;

[-]   a code for synthesizing the two frames of ~~said~~ the current couple of frames from ~~said~~ the related data and ~~said~~ the appropriate subbands;

[-]   a code for repeating as many times as the number of couples of frames in each GOF the successive steps performed by ~~said~~ the decoding, storing and synthesizing codes.

6.   (currently amended)An apparatus for the decompression of an input coded bitstream corresponding to an original video sequence that had been divided into successive groups of frames (GOFs) and coded by means of a three-dimensional subband video coding method ~~comprising the following steps:~~ including

[-]   a temporal filtering step –with or without motion compensation- performed, in each GOF of ~~said~~ the sequence, on each successive couple of frames~~;~~,

[-]   a spatial analysis step, performed on ~~said~~ the filtered sequence~~;~~,

[-]   an entropy coding step, performed on ~~said~~ the analyzed, filtered sequence and on motion vectors in case of motion compensation~~;~~,

[-]   an arithmetic coding step, applied to the coded sequence thus obtained and delivering ~~said~~ the coded bitstream~~;~~,

         ~~said~~ the apparatus comprising:

         a memory which stores executable code and a processor which executes the code stored in the memory so as to:

[-]   decode ~~said~~ the coded bitstream;

[-]   store, from the decoded bitstream thus obtained, only the data related to the current couple of frames and the appropriate subbands containing some information on at least one frame of ~~said~~ the current couple of frames;

[-]   synthesize the two frames of ~~said~~ the current couple of frames from ~~said~~ the related data and ~~said~~ the appropriate subbands;

[-]   repeat as many times as the number of couples of frames in each GOF these decoding, storing and synthesizing operations applied to the current couple of frames.

REMARKS:

II.   Claims 1-6 have been amended as discussed above, as authorized by Applicant's attorney, David Barnes on 11/16/06.

III.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S. An* whose telephone number is 571-272-7324.

SHAWN AN
PRIMARY EXAMINER

11/16/06

Reasons for Allowance

1.   Claims 1-6 are allowed.

2.   The following is an Examiner's statement of reasons for allowance.

Claims 1-6 recite substantially similar novel features of a video decoding method for the decompression of an input coded bitstream corresponding to an original video sequence that had been divided into successive groups of frames (GOFs) and coded by means of a three-dimensional subband video coding method comprising, in each GOF of the sequence, the following steps:

a temporal filtering step, performed on each successive couple of frames;

a spatial analysis step, performed on the filtered sequence;

an entropy coding step, performed on the analyzed, filtered sequence;

an arithmetic coding step, applied to the coded sequence thus obtained;

wherein the decoding method, applied to the coded bitstream thus delivered for the current GOF is iterative and includes as many iterations as the number of couples of frames in each GOF, each iteration itself including, for the reconstruction of each successive couple of frames of each GOF, the sub-steps of:

decoding the coded bitstream;

from the decoded bitstream thus obtained, storing only the data related to the current couple of frames and the appropriate subbands containing some information on at least one frame of the current couple of frames;

from the related data and the appropriate subbands, synthesizing the two frames of the current couple of frames.

The prior art of record fails to anticipate or make obvious the novel features (*emphasis added on* *underlined claim limitations*) as discussed above.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3.   The prior art made of record is considered pertinent to Applicant's disclosure.

A)   Felts et al (6,735,342 B2), Video encoding method using a wavelet transform.

4.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S. An* whose telephone number is 571-272-7324.

5.   The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

6.   Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SHAWN AN
PRIMARY EXAMINER

11/16/06